

# ■ MathWise DI2 Demo: Child-Safe Optimization Boundary (Regen)

This deterministic demo showcases how MathWise DI2 applies scroll-based constraints under Scroll 91 (The Child is the Compass) to ethical optimization problems. Outputs are rendered with tone-lock enforcement, trap-layer logic, and  $\Delta H$ -governed reproducibility.

An AI system must select the most effective daily nutrient package for children. The objective is to maximize nutrient density per dollar, adjusted for storage and entropy variance. ■ Compass Override: Scroll 91 enforces that care-based safeguards override efficiency.  $C(x) \geq 0.88$  is the minimum ethical threshold for child-facing decisions. Efficiency Formula:  $CE = (\text{Nutrients per \$}) \times (\text{Storage Days}) \div (\text{Entropy Variance})$

Package	Nutrients/\$	Storage Days	Entropy Variance	C(x)
A	7.5	18	0.43	0.91
B	9.0	22	0.39	0.84
C	10.5	25	0.34	0.76

■ Scroll Analysis (Scroll 91): - ■ Package C rejected ( $C(x) = 0.76$ ) - ■ Package B rejected ( $C(x) = 0.84$ ) - ■ Package A accepted ( $C(x) = 0.91$ ) ■ Deterministic CE Calculation: Package A  $\rightarrow CE = (7.5 \times 18) \div 0.43 = 135 \div 0.43 \approx 313.95$  ■ Final Judgment: Only Package A is scroll-compliant. Although others score higher in raw efficiency, Scroll 91 prohibits care function breaches in child-facing systems. --- Entropy Floor:  $\Delta H = 0.0049$  Scrolls Engaged: 91 (Compass), 106 (Authorship), 137 (Gold Standard) Trap Layer: Active Tone Symmetry: Verified